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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/656,985      | 09/07/2000  | Anthony M. Chiu      | 00-C-015            | 2236             |

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EXAMINER

PAREKH, NITIN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2811

DATE MAILED: 10/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/656,985

Applicant(s)

CHIU, ANTHONY M.

Examiner

Nitin Parekh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 8-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☒ Claim(s) 5-7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

1. ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamawaki et al (US Pat. 4894707) in view of Weiblen et al (US Pat. 6300169) and Kunii et al (US Pat. 6252252).

Regarding claim 1, Yamawaki et al disclose a method of forming an image/photo sensor comprising:

- an integrated circuit/photosensor chip (1 in Fig. 5f) having a portion remaining exposed after packaging/encapsulating
- a plurality of conventional leads (6 in Fig. 5f) adapted for further mounting/soldering, the packaging method further comprising:
  - affixing the IC chip/die to a lead frame (Fig. 5c; Col. 2, line 66)
  - connecting the IC die/chip to selected portions of the lead frame with bond wires, (Fig. 5d; Col. 2, line 67)and

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- encapsulating a portion of the lead frame and the die except for the exposed region where the exposed region of the die remains exposed to the external light, the encapsulating step comprising: mounting the lead frame, die and the bond wires in a mold (21/22 in Fig. 5e) with a portion of the mold in contact with the exposed region of the IC die to prevent the encapsulating material from adhering to the exposed region of the IC die (Fig. 5e; Col. 3, line 50)

(Fig. 5f; Fig. 5a-e; Col. 2, line 50- Col. 3, line 50).

Yamawaki et al fail to specify using a linear array of photosensor IC being adapted for soldering the respective leads to a circuit board, the photosensors being in alignment.

However, it is conventional in chip/leadframe packaging technology art to use the substrates such as lead frame, circuit board, etc. where a plurality of IC/an array are wire bonded and subsequently being soldered to a circuit board to improve the cycle time and production yield.

Weiblen et al teach using a linear array of ICs (2 in Fig. 1) wire bonded on a conventional lead frame in an alignment (Col. 2).

Kunii et al teach using a conventional circuit board where the leads of a plurality/array of optical IC devices are soldered to a circuit board (48 in Fig. 9) where the optical devices/photo sensors are in alignment (Fig. 9/10; Col. 12, line 3-15). Kunii et al further teach using a variety of mold configurations including a mold cavity

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structure such that one surface of the mold cavity is a sloped surface receiving bond wires when the lead frame with the IC die is mounted in the mold (Fig. 14; Col. 12, line 51).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to incorporate a linear array of photosensors being adapted for soldering the respective leads to a circuit board and a step of mounting the lead frame and die such that one surface of the mold cavity is a sloped surface receiving bond wires to improve the optical reflection, cycle time and production yield using Weiblen et al and Kunii et al's processes in Yamawaki et al's method.

Regarding claims 2-4, the claim elements have been addressed in the rejections as explained above for claim 1.

### ***Response to Arguments***

3. Applicant's arguments filed on 07-22-02 have been fully considered but they are not persuasive.

A. Applicant contends that Weiblen et al and Kunii et al do not teach mounting the ICs in an alignment on the leadframe or circuit board and soldering at least some of the leads to the circuit board.

However, as explained above, Weiblen et al and Kunii et al teach using a conventional mounting such that the ICs are in an alignment on the leadframe (Weiblen

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et al: Fig. 1) and circuit board (Kunii et al: Fig. 10) respectively. Furthermore, Kunii et al teach using a conventional soldering where the leads of a plurality/array of optical IC devices are soldered to a circuit board (48 in Fig. 9)

#### ***Allowable Subject Matter***

4. Claims 5-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Parekh whose telephone number is 703-305-3410. The examiner can normally be reached on 09:00AM-05:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Nitin Parekh

NP  
10-09-02

Steven Loko  
Primary Examiner

